Complete Summary

GUIDELINE TITLE

Discharge guidelines for the technology dependent infant.

BIBLIOGRAPHIC SOURCE(S)

National Association of Neonatal Nurses. Discharge guidelines for the technology dependent infant. Glenview (IL): National Association of Neonatal Nurses; 1999. 7 p. [31 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Conditions requiring dependence on technology, such as:

- Bronchopulmonary dysplasia (BPD)
- Persistent pulmonary hypertension
- Apnea of prematurity
- Respiratory distress syndrome
- Impaired suck/swallow
- Spina bifida
- Short bowel syndrome
- Malabsorption
- Reactive airway disease

GUIDELINE CATEGORY

Management

CLINICAL SPECIALTY

Nursing
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Nurses

GUIDELINE OBJECTIVE(S)

To foster a successful transition from hospital to home for the technology dependent infant.

TARGET POPULATION

Technology dependent infants: Physiologically stable infants with the assistance of technology (e.g. phototherapy lights, ventilator, apnea monitor)

INTERVENTIONS AND PRACTICES CONSIDERED

1. Multidisciplinary team discharge planning
2. Achievement by infant of specific physiologic parameters prior to discharge
3. Demonstrated competence of primary home caregivers
4. On-going medical and nursing supervision of infant

MAJOR OUTCOMES CONSIDERED

- Hospital/neonatal intensive care unit (NICU) length of stay
- Parent/family/caregivers satisfaction with their hospital and transition experience
- Hospital readmission rates
- Physiologic stability with technology

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The MEDLINE, Cochrane, and Vermont Oxford databases were searched by the guideline developer using the keywords homecare, technology, and neonate.

NUMBER OF SOURCE DOCUMENTS

Approximately 100

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Subjective Review

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The American Academy of Pediatrics volunteered to review the initial drafts of the document. In addition to the NANN Board of Directors who reviewed these guidelines prior to publication, other contributors and reviewers are recognized in the guideline document for their assistance.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Guideline I

Multidisciplinary discharge planning teams facilitate the flow of discharge for the technology dependent infant (Ahmann, 1996; Ashbaugh, Rude, & Kilbride, 1999; Bakewell-Sachs & Porth, 1995; McGinley et al., 1996).

Key Points:

- Composition of the team may include, but is not limited to a core team of home care and neonatal intensive care unit (NICU) staff nurses, case managers, discharge planner/utilization reviewer, community health coordinator, attending neonatologists, nutritionists. In addition other staff may be included as appropriate for the infant's condition: audiologists, respiratory, physical, and occupational therapists, social workers, lactation consultants, developmental specialists, and pastoral care staff.
- Discussion at weekly discharge planning meetings may include, but is not limited to infant diet/nutrition, medications, therapies, needs for durable and/or disposable medical equipment, intermittent and/or private duty nursing, an update on caregiver involvement and their progress towards learning care, and follow-up appointments.
- Communication with the caregivers may be optimized through organized team meetings between the caregivers and key members of the health care team.
- Conduct a patient care conference with all involved parties including the caregivers. During this meeting anticipated discharge dates should be discussed as well as the teaching plan outlined with the caregivers along with timelines for completion.
- Continuity of care is essential to ease the discharge and transition to home. Primary nursing care as the model is ideal but if this is not possible, a model that provides a mechanism for assessment of parental readiness to assume care is needed. The nurse serves as the coordinator of all discharge teaching for the infant and family.

Guideline II

Infant must achieve specific physiologic stability prior to discharge to the home environment.

Key Points:

- Thermal stability in an open air environment (maintains axillary temperature of 36.5 to 37.5 degrees Celsius) (National Association of Neonatal Nurses [NANN], 1997).
- Stable cardiopulmonary status with or without external supports (does not require interventions other than gentle touching) apnea/bradycardia; saturations >95 for oxygen dependent infants)
- Stable neurologic status as determined for each individual neonate
- Successful mode of enteral feeding, with a positive pattern of weight gain for several days prior to discharge. Parenteral feeding may be a successful mode of feeding for selected neonates for whom other physiologic criteria are met and who have stable access via a BROVIAC® or percutaneous intravenous catheter.
- Hyperbilirubinemia that can be treated with home phototherapy (NANN, 1997). Some institutions use the rule of requiring no more than 2 lights and a total bilirubin of less than 12, declining after day 3 of life. However there is debate as to whether such "prescriptives" are necessary. At this time it is best to refer to current institutional policy and to be consistent within an institution.

- Suspected sepsis/sepsis that can be treated at home with stable access i.e. with percutaneous intravenous catheters. First the infant would meet the above criteria for stability such as thermal and cardiopulmonary stability.

Guideline III

Primary caregivers must be capable of learning and demonstrating competence in providing all aspects of infant care to ensure safety in the home (Bialoskurski, Cox, & Hayes, 1999; Doering, Dracup, & Moser, 1999; Miles et al., 1999; Shaker, 1999; Smith, 1999; Stephenson, 1999).

Key Points:

- Early participation in infant care, including such activities as diapering, bathing, kangaroo care, and understanding behavioral cues, are important preparations to educating and empowering caregivers throughout the NICU hospital stay. Ideally this participation should start at birth.
- Education about the equipment to be utilized in the home must be provided to all individuals involved with the care of the technology dependent infant.
    - This education is done by the equipment company. If after the initial in-service the family needs additional education, it is not unreasonable to have the company return and reinforce the teaching.
    - Teaching should take place in the hospital and the family learn to put the equipment on their infant.
    - These companies should have pediatric experience if their equipment is to be used on infants dependent on technology.
- Identification of at least two primary caregivers is necessary for specific technology dependent infants, i.e. those with central lines for parenteral nutrition, tracheostomies, and/or ventilator support.
- Return demonstration of both routine and all specialized care measures is mandatory for caregivers of technology dependent infants.
- Provision of supplemental educational materials should be in a usable format for the care providers, i.e. primary language, appropriate reading level, culturally sensitive, as well as alternative materials for those who cannot read (videotapes, audiovisual aids, audiotapes).
- Enhancement of caregiver independence should result from the opportunity to provide total care for an extended period of time while in the hospital setting utilizing nursing consultation for support and reinforcement (Costello & Chapman, 1998).
- Consideration for respite care versus day care for medically fragile infants should be included in the education of caregivers. Parents need to know the difference between respite care that is usually used to give parents a break from total caregiving and is not done on a routine basis versus day care. Day care is usually just a routine, scheduled day care done by professional or lay personnel. They need this information to determine what is best to meet their personal needs and those of there infant.
- Use of a transitional care unit or supervised parent care in the NICU/hospital prior to discharge is helpful to assess the family's readiness for discharge and any special needs they might have once home.
- Parents should spend at least 8 to 10 hours caring for their child prior to discharge. For most children, parents need to do this more than once.

- Rooming-in if possible is done after all discharge teaching is done and discharge is eminent.
- Development of a written summary of the daily routine should be provided to assist alternate caregivers of the technology dependent infant.

Guideline IV

Financial resources must be evaluated and secured to consider feasibility of transitioning care into the home.

Key Points:

- Early identification of health care coverage through Medicaid and/or insurance is necessary to arrange the needed durable and disposable medical equipment as well as follow-up care.
- Discussion with insurance company benefits department regarding home health coverage is needed to facilitate planning a discharge dependent on intermittent skilled nursing visits or continuous private duty nursing care. Since precertification/authorization of all home nursing, durable medical equipment, therapy, and subspecialty follow-up needs for the managed care population must precede arrangement of these services.
- Education of primary caregivers regarding the steps required to obtain referrals for future care needs (i.e. subspecialty appointments, therapies, rehospitalization, etc.) will empower them in pursing future health care needs. This includes knowing:
    - Utilization of in-network providers for managed care population is preferable when possible.
    - Negotiation with case managers to utilize out-of-network providers may be required to facilitate follow-up care. These infants need specialized follow-up care from either a high risk infant/pediatric clinic or appropriate specialty clinic such as an apnea clinic.
    - Completion of state/federal applications for funds available to medically fragile children may be necessary to provide maximum resources for the continuum of care.

Guideline V

The home environment and community support systems must be prepared to facilitate a smooth transition home.

Key Points:

- Inspection of the home prior to discharge may be warranted based on the amount and complexity of technologic equipment that is required. Issues to assess include:
    - Availability of space
    - Appropriateness of electrical supply
    - Availability of telephone access, minimally the ability to contact local emergency medical services
    - Availability of water and plumbing

        - Adequacy of heating and ventilation systems (American Academy of Pediatrics, 1998; Bakewell-Sachs & Porth, 1995; Raddish & Merritt, 1998).
- Consideration of the home layout may assist in the selection of equipment to be used in the home, i.e., a bi-level home may require two standard oxygen tank systems for the infant on continuous supplemental oxygen.
    - The equipment company should assess the home prior to discharge to determine the family's exact needs.
- Notification of local utility companies and emergency medical services is necessary for the technology dependent neonate.
- Notification of local emergency rooms is warranted for the most complex technology dependent infant.
- Use of technology such as video cams, videophones, or web sites that facilitate remote "assessment" of the infant may be helpful especially in homes far from tertiary health care facilities.

Guideline VI

Follow-up care must be thoroughly planned to ensure on-going medical and nursing supervision of infant health maintenance (NANN, 1997).

Key Points:

- Early identification of a primary care provider/pediatrician is crucial. Physician to physician communication prior to discharge should include a discussion of pertinent medical history, technologies to be utilized following discharge, and the status of routine pediatric care, such as newborn screens and immunization. If a neonatal nurse practitioner has been involved and one will be following the infant and family, nurse and physician also need to communicate and plan follow-up care together.
- Arrangements for the initial visit with the infant's primary care provider/pediatrician should be done prior to discharge. This visit is recommended within 2 to 10 days of NICU discharge.
- Arrangements for subspecialty follow-up appointments should be made prior to discharge.
- Use of an ongoing discharge summary that is begun at birth that highlights the medical treatments by systems and is updated at least monthly is helpful to improve communication and coordinate follow-up. This summary should include a current plan of care and referrals at discharge.
- Procedures for coordination of home nursing care (intermittent visits versus private duty) should be arranged prior to discharge.
- The knowledge base and experience of the caregivers related to technology dependent neonates must be sufficient to ensure adequate assessment, intervention, planning, evaluation, and parent/caregiver education.
- The mode of transportation for follow-up visits should be established. Many of these infants MUST go in an ambulance and this needs coordination and pre-approval from the insurance agency.
    - If the infant is stable enough, the retrofitting of the family vehicle to provide a means of securing the oxygen canisters, monitors, etc. may be necessary and require planning prior to discharge.
    - A retrofitted super stroller to strap equipment may help the family move about with the infant or assist others who may also provide care.

    - Coordination of transportation with consideration of the equipment, with the local emergency room and life squad is another consideration especially in very rural areas who rely on volunteers or who are not equipped with neonatal equipment.
- Back-up power especially for those infants requiring ventilators is essential. This power should be in the form of a generator. In some areas of the country, it may even be necessary to have a back-up ventilator as the infant could not survive a malfunction.
- Modified wheelchair for the infant who is ventilator dependent is often covered by insurance. This wheelchair can facilitate the transporting of the infant between the home and the clinic visit. This chair can be modified to include an activities tray as the infant grows.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Infants hospitalized in a Neonatal Intensive Care Unit (NICU) will be transitioned to the home when physiologically stable with caregivers capable of providing necessary care.
- Parent/family/caregivers satisfaction with their hospital and transition experience will be positive, as a result of empowerment through education regarding care of the infant.
- Readmission rates to the hospital following NICU discharge will not be increased due to problems related to use of technology in the home.
- Infants discharged form the NICU will be assessed over time for the ability to maintain physiologic stability with less technology.
- NICU hospital days will be utilized effectively with an overall decrease in length of stay.

POTENTIAL HARMS

- Family and/or nurses in the infant and family's home area may not able to provide adequate care

- Once home, the infant may live too far away from medical facilities that help in an emergency may not be readily available
- The stress of caregiving to a still vulnerable infant is shifted from the hospital to the home
- There is potential for nosocomial infections, delays in bonding, and potential developmental delays due to environmental influences. The latter two are more risks of remaining in the hospital than usually they are at home.

Subgroups Most Likely to Be Harmed:

Infants/families in remote geographic locations

QUALIFYING STATEMENTS

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This guideline does not preclude the use of other acceptable methods of caring for and discharging the technology dependent infant. Additional practices known to improve the quality of neonatal care are encouraged and not restricted despite the development of this document.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999

GUIDELINE DEVELOPER(S)

National Association of Neonatal Nurses - Professional Association

SOURCE(S) OF FUNDING

National Association of Neonatal Nurses (NANN)

GUIDELINE COMMITTEE

Education and Practice Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Sandra Swanson, RN, BSN, MSOD and Margaret Naber, RNC, MSN, NNP

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

GUIDELINE AVAILABILITY

Electronic copies: Not available at this time.

Print copies: Available from the National Association of Neonatal Nurses (NANN), 4700 W. Lake Avenue, Glenview, IL 60025-1485. An order form is available at the NANN Web site.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on February 28, 2000, 1999. The information was verified by the guideline developer on March 10, 2000.

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